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Application Number: 10/659,169  
Filing Date: September 10, 2003  
Applicant: Lin Wang  
Title: Manufacture of Polyethylenes  
Attorney Docket: CL1518 US CNT

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<b>TRANSMITTAL FORM</b> (to be used for all correspondence after initial filing)	Application Number	10/659,169	
	Filing Date	September 10, 2003	
	First Named Inventor	Lin Wang	
	Group Art Unit	1713	
	Examiner Name	Roberto Rabago	
Total Number of Pages in This Submission	15	Attorney Docket Number	CL1518 US CNT

### ENCLOSURES (check all that apply)

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APPLICATION NO.: 10/659,169  
ATTORNEY DOCKET NO.: CL1518 US CNT

PATENT  
GROUP ART UNIT 1713

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

IN RE APPLICATION OF:  
**LIN WANG, ET AL.**

APPLICATION NO.:  
**10/659,169**

FILED:  
**SEPTEMBER 10, 2003**

FOR:  
**MANUFACTURE OF POLYETHYLENES**

GROUP ART UNIT:  
**1713**

EXAMINER:  
**ROBERTO RABAGO**

ATTORNEY DOCKET NO.:  
**CL1518 US CNT**

**AMENDED APPEAL BRIEF UNDER 37 C.F.R. §§ 1.191 & 41.37 IN RESPONSE  
TO NOTICE OF NON-COMPLIANT APPEAL BRIEF UNDER 37 CFR 41.37**

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Sir:

This amended appeal brief is in response the notice of Non-Compliant Appeal Brief mailed June 27, 2007. The original Appeal Brief was filed on February 12, 2007 pursuant to 37 C.F.R. §§ 1.191, 41.37(c), 41.37 generally, and MPEP § 1205.01, ¶ 6 (Revision 5) and was in support of the Appeal filed December 21, 2006, appealing the Final Office Action dated August 25, 2006 and the Advisory Action dated November 15, 2006.

In the Notice of Non-Compliant Appeal Brief, it was pointed out that in regard to an amendment that was filed subsequent to the final rejection, a statement of the status of the amendment was not included in the Appeal Brief. A statement of the status of the amendment has been included in this Amended Appeal Brief.

Along with the Appeal Brief filed on February 12, 2007, the filing fee for the Appeal Brief in the amount of \$500.00 was submitted.

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**I. REAL PARTY IN INTEREST**

The real party in interest is the Assignee of the case, E. I. DuPont de Nemours & Co., a Delaware corporation (*hereinafter*, "DuPont").

**II. RELATED APPEALS AND INTERFERENCES**

None known to Appellants.

**III. STATUS OF THE CLAIMS**

Claim 1-25, 29, and 34 are canceled. Claims 26-28, 30-33, and 35-39 remain in the case. Claims 26-28, 30-33, and 35-39 have been rejected under 35 U.S.C. § 103(a). Said rejection is the subject of this appeal. No claims are allowed.

**IV. STATUS OF AMENDMENT**

In response to the Final Rejection mailed August 25, 2006, an amendment after final rejection was submitted October 24, 2006. No further amendments were made to the claims and the obviousness rejection over cited references was argued by Applicants. In an Advisory Action by the Examiner mailed November 15, 2006, the amendment was not entered for the reason that the amendment did not place the application in better form for appeal by materially reducing or simplifying the issues for appeal.

**V. SUMMARY OF CLAIMED SUBJECT MATTER**

Generally, the present application describes blends of (co)polyethylenes made in a polymerization reactor, by using at least two different polymerization catalysts. Ethylene, and one or more  $\alpha$ -olefins, are fed to and/or formed in the polymerization reactor. Because said two different polymerization catalysts have differing activities with regard to the polymerization of  $\alpha$ -olefins, two (co)polyethylenes, differing in comonomer ( $\alpha$ -olefin) content, are produced.

The process(es) for making these polymers is (are) generally described at page 6, line 21 to page 7, line 30; page 12, lines 13-19; page 13, line 23 to page 15, line 3; and page 16, lines 5-8 and 15-16 in the original Specification. A general description of the polymers produced by this process is found at page 6, lines 21-29; and page 17, line 16 to page 18, line 26. Not included in the above listings are more preferred items such as preferred polymerization or oligomerization catalysts.

#### Claim 26

In the claims under consideration, Claim 26 is the only independent claim. Claim 26 relates to a process for producing a blend of two or more polyethylenes, which comprises contacting ethylene (page 6, lines 21-29), one or more  $\alpha$ -olefins of the formula  $R^{18}CH=CH_2$  wherein  $R^{18}$  is n-alkyl containing an even number of carbon atoms (page 6, line 30 to page 7, line 10), a first active polymerization catalyst to copolymerize ethylene and the separately added  $\alpha$ -olefins (page 12, lines 13-19; and page 13, line 23 to page 14, line 22), a second active polymerization, that under the polymerization conditions, has little, or no tendency, to copolymerize ethylene and  $\alpha$ -olefins (page 13, lines 14-22; and page 14, line 23 to page 15, line 3). These polymerization catalysts must be Ziegler-Natta and/or metallocene catalysts (page 13, lines 26-31; and page 14, lines 23-25), with a *proviso* that when the first and second active polymerization catalysts are metallocenes, said one or more added olefins of the formula  $R^{18}CH=CH_2$  must be a series (two or more) of olefins (page 6, line 31 to page 7, line 1).

As noted in the Application, other process conditions are "normal" for the particular catalysts used in the polymerization (page 16, lines 15-16). These conditions would include conditions such as, whether the process was continuous, batch, or semi-batch; gas phase or liquid phase (suspension or solution) process, whether one or more of the catalysts were supported or not; whether and what catalyst activators would be used; temperature; pressure; etc. Such a condition (gas phase process) is only mentioned specifically only in claim 32, so these conditions are not dwelled upon here.

## VI. GROUND OF REJECTION TO BE REVIEWED ON APPEAL

The ground of rejection to be reviewed on appeal is the rejection of Claims 26-28, 30-33, and 35-39 under 35 U.S.C. § 103(a), as obvious over European Patent Application EP 128046, to Ewen, *et al.* (*hereinafter*, "Ewen").

## VII. ARGUMENT

### (A) REJECTION UNDER 35 U.S.C. § 103(A)-CLAIMS 26-28, 30-33, & 35-39 OVER EUROPEAN PATENT APPLICATION EP 128046, TO EWEN, ET AL.

Provided below is the Appellants' traversal of the Final Rejection and Advisory Action, and Arguments in support thereof.

The main issue in this rejection is whether the Ewen teaches or suggests that two or more  $\alpha$ -olefins be used in its polymerization process. As the Examiner has pointed out, the Ewen reference suggests the use of two metallocene catalysts having different propensities to copolymerize ethylene and an  $\alpha$ -olefin. However the Examiner further contends that Ewen teaches using two or more  $\alpha$ -olefins. Appellants dispute this contention.

First we deal with whether Ewen actually states that more than one  $\alpha$ -olefin be used in the polymerization, as the present claims require, when two metallocene catalysts are used. The page and line number referred to below are to publication EP 0128046A1 to Ewen, *et al.* ("Ewen"), and not the issued patent. Ewen's description of the invention starts at page 3 line 9. Pertinent quotes are as follows (Emphasis added in each case):

- (a) Page 3, lines 10-12:  
"The . . . invention provides a process for producing (co)polyolefin reactor blends comprising polyethylene and **(co)polyethylene- $\alpha$ -olefins.**"
- (b) Page 3, lines 15-16:  
". . . simultaneously polymerizing ethylene an copolymerizing ethylene **with an  $\alpha$ -olefin.** . . ."
- (c) Page 3, lines 26-27:  
". . . polymerization of reactor blends of polyethylene with **ethylene- $\alpha$ -olefin copolymers;** . . ."

- (d) Page 4, lines 27-30:  
"The . . . invention is directed towards a catalytic process for the polymerization of ethylene and **one or more  $\alpha$ -olefins to polyethylene-copolyethylene- $\alpha$ -olefin** reactor blends."
- (e) Page 4, line 35 to Page 5, line 1:  
". . . with **copolyethylene higher  $\alpha$ -olefins** having from 3 to about 10 carbon atoms and preferably 4 to 8 carbon atoms."
- (f) Page 5, lines 1-2:  
"Illustrative of the higher  **$\alpha$ -olefins** are propylene , butene-1, hexene-1 and octene-1."
- (g) Page 5, line 3:  
"Preferably, **the  $\alpha$ -olefin** is propylene or butene-1."
- (h) Page 5, lines 4-5:  
"In the process of the present invention, ethylene, together with the  **$\alpha$ -olefins**, is polymerized. . ."
- (i) Page 11, lines 10-11:  
". . . is known for blend of ethylene and **copolymers** of ethylene and **higher  $\alpha$ -olefins**."
- (j) Page 17, Claim 8:  
". . . polymerizing ethylene and **at least one  $\alpha$ -olefin** simultaneously."

In opinion of the Appellants, at best, these quotes taken together are ambiguous in suggesting whether or not two or more  $\alpha$ -olefins are used. For example, points (d) and (j) unambiguously support the use of more than one  $\alpha$ -olefin. On the other hand, (b) and (g) clearly suggest that only one  $\alpha$ -olefin should be used. The rest of the quotes, whether using singular or plural, seem to use the singular or plural merely to make the text read better. For instance, point (f) above stating that "Illustrative of the higher  **$\alpha$ -olefins** are propylene, butene-1, hexene-1 and octene-1;" becomes cumbersome when read as: "Illustrative of the higher  **$\alpha$ -olefin** are propylene, butene-1, hexene-1 and octene-1."

Therefore, Appellants look for other evidence in Ewen to understand what exactly does the disclosure intend convey. At page 8, lines 30-33 Ewen states (in essence) that the sterically larger the monomer ( $\alpha$ -olefin), the less it will tend to copolymerize with ethylene. One skilled in the art would probably take this to mean that various  $\alpha$ -olefins would copolymerize at different rates because of their differing sizes, and therefore use of more than one  $\alpha$ -olefin would not be desirable, thus teaching away from using more than one  $\alpha$ -olefin.



Even more illustrative are the polymer products made in the examples and mentioned as possible products. Although Appellants are aware that the disclosure is not limited to such items, in this instance, they will assist the artisan in interpreting what Ewen is disclosing. As the Examiner has noted, none of the examples illustrates using more than one  $\alpha$ -olefin. At page 11, lines 3-4, a list of products which can be produced by Ewen's process are disclosed and they are "HDPE/EPR copolymer, LLDPE/EPR copolymer, HDPE/LLDPE and HDPE/LLDPE/EPR copolymer blends". HDPE is high density polyethylene, normally an ethylene homopolymer, EPR is an acronym for ethylene-propylene rubber, a polymer containing only one  $\alpha$ -olefin, propylene. LLDPE is a copolymer of ethylene and an  $\alpha$ -olefin. Although in theory more than one  $\alpha$ -olefin could be used to make an LLDPE, one skilled in the art would immediately think of LLDPE that contains only one  $\alpha$ -olefin, since these are by far more common than those that could contain more than one  $\alpha$ -olefin.

Thus, the "extrinsic evidence" within Ewen itself does not support the idea that Ewen discloses or suggests the use of more than one  $\alpha$ -olefin in his process. After reading Appellants' invention and then Ewen, it would be easy to interpret Ewen as suggesting the use of more than one  $\alpha$ -olefin. However, this is the use of impermissible hindsight. "One of more difficult aspects of resolving questions of nonobviousness is necessity to guard against slipping into use of hindsight."<sup>1</sup> "Thus, in deciding the issue of obviousness, [the court] must look at the prior art presented from a vantage point in time prior to when the invention was made, . . ."<sup>2</sup> Absent knowledge of the present invention an artisan would not look upon Ewen as suggesting the use of more than one  $\alpha$ -olefin in his process, because ". . . it is well settled that the entire disclosure of a reference must be considered under 35 USC § 103. . ."<sup>3</sup>

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<sup>1</sup> *In re Carroll*, 601 F.2d 1184, 1186 (CCPA 1979) (citing *Graham v. John Deere Co.*, 383 U.S. 1, 36 (1965)).

<sup>2</sup> *Id.*

<sup>3</sup> *Ex parte Anderson*, 21 U.S.P.Q. 2d 1241 (BPAI 1991) (citing *In re Mills*, 470 F.2d 649, (CCPA 1972)).

Appellants also point out that Ewen prefers the use of propylene or butene-1 (page 5, line 3). Even if one were to use both of these favored  $\alpha$ -olefins in the polymerization process, one would not meet the limitations of the present claims, which require at least two  $\alpha$ -olefins having an even number of carbon atoms present in the polymerization. However, there is no clear exposition in the reference that a series of  $\alpha$ -olefins should be used, much less a series of  $\alpha$ -olefins wherein the olefins must have an even number of carbon atoms. In other words, Ewen does not suggest that at least two  $\alpha$ -olefins having an even number of carbon atoms be present in the polymerization, which is an essential limitation of the rejected claims when two metallocene catalysts are present.

Furthermore, when one looks at Examples 1(a), 1(b), 1(c), 2, and 3 in Ewen for guidance, it is clear that Ewen uses only one  $\alpha$ -olefin with ethylene. In fact, Ewen uses only propylene in all its examples. Ewen therefore must be interpreted to mean the use of one  $\alpha$ -olefin.

For the above reasons, Ewen does not render the presently rejected claims obvious.

**VIII. CONCLUSION**

For the reasons set forth above, the Board of Patent Appeals and Interferences is respectfully requested to reverse the final rejection of pending Claims 26-28, 30-33, and 35-39 and indicate allowability of all claims.

Please charge any fee due which is not accounted for to Deposit Account No. 04-1928 (E.I. du Pont de Nemours and Company).

Respectfully Submitted,

BY:

Date: July 24 2007



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**CLAIMS APPENDIX**

26. A process for producing a blend of two or more polyethylenes, comprising the step of contacting:
- (1) ethylene;
  - (2) one or more separately added  $\alpha$ -olefins of the formula  $R^{18}CH=CH_2$ , wherein  $R^{18}$  is alkyl, wherein  $R^{18}$  has an even number of carbon atoms;
  - (3) a first active polymerization catalyst under conditions to copolymerize ethylene and the separately added  $\alpha$ -olefins; and
  - (4) a second active polymerization catalyst under conditions to polymerize ethylene, but has little or no tendency to copolymerize ethylene and  $\alpha$ -olefins,
- and provided that said first and said second active polymerization catalysts are selected from the group consisting of Ziegler-Natta catalysts and metallocenes,
- and further provided that when said first active polymerization catalyst and said second active polymerization catalyst are both metallocenes, said one or more separately added olefins is a series of olefins of the formula  $R^{18}CH=CH_2$ .
27. The process as recited in claim 26 wherein a series of  $\alpha$ -olefins of the formula  $R^{18}CH=CH_2$  are present.
28. The process as recited in claim 26 wherein the second active polymerization catalyst is chemically different than the first active polymerization catalyst.
30. The process as recited in claim 26 wherein the first polymerization catalyst is a metallocene-type catalyst.

31. The process as recited in claim 26 wherein the first polymerization catalyst and second polymerization catalyst are supported.
32. The process as recited in claim 31 carried out in the gas phase.
33. The process as recited in claim 32 wherein the second active polymerization catalyst is chemically different than the first active polymerization catalyst.
35. The process as recited in claim 26 wherein the first and second polymerization catalysts are both metallocenes.
36. The process as recited in claim 28 wherein the first and second polymerization catalysts are both metallocenes.
37. The process as recited in claim 31 wherein the first and second polymerization catalysts are both metallocenes.
38. The process as recited in claim 33 wherein the first and second polymerization catalysts are both metallocenes.
39. The process as recited in claim 26 wherein at least one  $\alpha$ -olefin wherein R<sup>18</sup> contains an odd number of carbon atoms is also present.

**EVIDENCE APPENDIX**

None

**RELATED PROCEEDINGS APPENDIX**

None



The Stamp of the Patent Office hereon acknowledges the receipt, on the date indicated, of the following:

Case No.: CL1518USCNT Application No.: 10659169

Inventor(s): Lin Wang et al.

Title: Manufacture of Polyethylenes

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Attorney: Joel Citron (DuPont)  
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